SVENSK STANDARD SS-EN 60861

Fastställd	Utgåva	Sida	Ansvarig kommitté
2008-04-28	1	1 (1+44)	SEK TK 45

Kärnteknisk mätutrustning – Utrustning för strålskyddsändamål – Utrustning för övervakning av radionuklider i strömmande vätskor och ytvatten

Equipment for monitoring of radionuclides in liquid effluents and surface waters

Som svensk standard gäller europastandarden EN 60861:2008. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60861:2008.

Nationellt förord

Europastandarden EN 60861:2008

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60861, Second edition, 2006 - Equipment for monitoring of radionuclides in liquid effluents and surface waters**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-IEC 861, utgåva 1, 1989 och SS-IEC 1311, utgåva 1, 1996, gäller ej fr o m 2011-02-01.

ICS 13.280

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60861

March 2008

ICS 13.280

English version

Equipment for monitoring of radionuclides in liquid effluents and surface waters
(IEC 60861:2006, modified)

Equipements pour la surveillance des radionucléides dans les effluents liquides et les eaux de surface (CEI 60861:2006, modifiée)

Einrichtungen zur Überwachung von Radionukliden in flüssigen Ableitungen und Oberflächengewässern (IEC 60861:2006, modifiziert)

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60861:2008 E

SEK Svensk Elstandard

Foreword

The text of the International Standard IEC 60861:2006, prepared by SC 45B, Radiation protection instrumentation, of IEC TC 45, Nuclear instrumentation, together with the common modifications prepared by the Technical Committee CENELEC TC 45B, Radiation protection instrumentation, was submitted to the formal vote and was approved by CENELEC as EN 60861 on 2008-02-01.

The following dates were fixed :

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2009-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-02-01

Clauses, subclauses, notes, tables and figures which are additional to those in IEC 60861 are prefixed “Z”.

Annex ZA has been added by CENELEC.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60038 (mod)	1983	IEC standard voltages[1)]	HD 472 S1 + corr. February	1989 2002
A1 + A2	1994 1997		A1	1995
IEC 60050-393	2003	International Electrotechnical Vocabulary - Part 393: Nuclear instrumentation - Physical phenomena and basic concepts	-	-
IEC 60050-394 + A1 + A2	1995 1996 2000	International Electrotechnical Vocabulary - Chapter 394: Nuclear instrumentation - Instruments	-	-
IEC 60068-2-38	1974	Environmental testing - Part 2: Tests - Test Z/AD: Composite temperature/humidity cyclic test	EN 60068-2-38	1999
IEC 61000-4-2 A1 A2	1995 1998 2000	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2 A1 A2	1995 1998 2001
IEC 61000-4-3	2006	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	2006
IEC 61000-4-4	2004	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2004
IEC 61000-4-5	2005	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2006

1) The title of HD 472 S1 is “Nominal voltages for low-voltage public electricity supply systems”.

Publication	Year	Title	EN/HD	Year
IEC 61000-4-6 + A1	2003 2004	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6[2)] + corr. August	2007 2007
IEC 61000-4-11	2004	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	2004
IEC 61000-4-12 A1	1995 2000	Electromagnetic compatibility (EMC) - Part 4-12: Testing and measurement techniques - Oscillatory waves immunity test	EN 61000-4-12[3)] A1	1995 2001
IEC 61000-6-4 (mod)	1997	Electromagnetic compatibility (EMC) - Part 6: Generic standards – Section 4: Emission standard for industrial environments	EN 61000-6-4[4)]	2001
IEC 61010-1	2001	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	EN 61010-1 + corr. June	2001 2002
IEC 61187 (mod)	1993	Electrical and electronic measuring equipment - Documentation	EN 61187 + corr. March	1994 1995
ISO/IEC Guide 98	1995	Guide to the expression of uncertainty in measurement (GUM)	-	-
ISO 10012	2003	Measurement management systems - Requirements for measurement processes and measuring equipment	EN ISO 10012	2003

2) EN 61000-4-6 includes A1:2004 + A2:2006 to IEC 61000-4-6.

3) EN 61000-4-12 is superseded by EN 61000-4-18:2007, which is based on IEC 61000-4-18:2006.

4) EN 61000-6-4 is superseded by EN 61000-6-4:2007, which is based on IEC 61000-6-4:2006.

CONTENTS

EQUIPMENT FOR MONITORING OF RADIONUCLIDES IN LIQUID EFFLUENTS AND SURFACE WATERS

1 Scope

This International Standard defines technical requirements for equipment for monitoring of alpha-, beta- or gamma-emitting radionuclides in liquid effluents and surface waters, provides some general guidance as to the possible detection capability of such equipment and indicates when and where its uses may be practicable.

NOTE Alpha monitoring in liquids is a possibility that has been demonstrated using a concentration device and collection of the concentrate in a filter, so this standard may also be applicable to alpha monitoring in liquids.

This standard is applicable to equipment for continuous monitoring of the activity:

– in liquid effluents which could be released in the environment during normal operations;

– in environmental waters.

This standard does not apply to equipment specifically for use in accident conditions that may require additional capabilities.

This standard is restricted to equipment for continuous monitoring of gross alpha or gross beta of maximum energy higher than 150 keV or gamma activity in liquid effluent streams and environmental waters. It does not deal with sample extraction and laboratory analysis.

The object of this standard is to lay down general requirements and give examples of acceptable methods for equipment to monitor continuously the activity of water.

This International Standard specifies, for the equipment described in the scope, the general characteristics, general test procedures, radiation, electrical, safety and environmental characteristics, and the identification and certification of the equipment. Performance requirements for the safe operation of electrical equipment are provided in IEC 61010-1. These safety requirements and corresponding tests are applicable if the manufacturer wants to, or is required to, label its equipment with the appropriate safety mark (for example, CE, UL, etc.).

This standard is applicable to water monitors intended to fulfil the following functions:

– measurement of the volumetric activity or count rate (see 5.1.2) due to radionuclides in the liquid and its variation with time;

– actuation of an alarm when a limit value of volumetric activity or count rate in water is exceeded.

Annex A gives some guidance for use with radioactive water monitors.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038:1983, *IEC standard voltages*
Amendment 1 (1994)
Amendment 2 (1997)[1]

IEC 60050-393:2003, *International Electrotechnical Vocabulary (IEV) – Part 393: Nuclear instrumentation – Physical phenomena and basic concepts*

IEC 60050-394:1995, *International Electrotechnical Vocabulary (IEV) – Chapter 394: Nuclear instrumentation – Instruments*
Amendment 1 (1996)
Amendment 2 (2000)

IEC 60068-2-38:1974, *Basic environmental testing procedures – Part 2-38: Tests – Test Z/AD: Composite temperature/humidity cyclic test*

IEC 61000-4-2:2001 *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*
Amendment 1 (1998)
Amendment 2 (2000)[2]

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4:2004, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2005, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6:2004, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*
Amendment 1 (2004)[3]

IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

IEC 61000-4-12:1995, *Electromagnetic compatibility (EMC) – Part 4-12: Testing and measurement techniques – Oscillatory waves immunity test*
Amendment 1 (2000)[4]

IEC 61000-6-4:1997, *Electromagnetic compatibility (EMC) – Part 6: Generic standards – Section 4: Emission standard for industrial environments*

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1 There exists a consolidated edition 6.2 (2002) including edition 6.0 and its amendments 1 and 2.

2 There exists a consolidated edition 1.2 (2001) including edition 1.0 and its amendments 1 and 2.

3 There exists a consolidated edition 2.1 (2004) including edition 2.0 and its amendment 1.

4 There exists a consolidated edition 1.1 (2001) including edition 1.0 and its amendment 1.

IEC 61010-1:2001, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements.*

IEC 61187:1993, *Electrical and electronic measuring equipment – Documentation*

ISO *Guide to the expression of uncertainty in measurement (GUM)*, 1995.

ISO 10012:2003, *Measurement management systems – Requirements for measurement processes and measuring equipment*